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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,685	06/06/2001	Stuart James Rowen	P2790/259496	7535
6858	7590	02/27/2004	EXAMINER	
BREINER & BREINER 115 NORTH HENRY STREET P. O. BOX 19290 ALEXANDRIA, VA 22314			RUTHKOSKY, MARK	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 02/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/875,685

Applicant(s)

ROWEN ET AL.

Examiner

Mark Ruthkosky

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/31/2002.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 1745

## **DETAILED ACTION**

### ***Priority***

The application is a continuation of PCT/GB00/02591 filed 7/4/2000.

### ***Information Disclosure Statement***

The information disclosure statement filed 7/31/2002 has been placed in the application file, and the information referred to therein has been considered as to the merits.

### ***Drawings***

The drawings filed on 6/6/2001 have been approved.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 6-8, 10, 11, 14, 15 and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by De Haas et al. (US 5,833,516.)

Art Unit: 1745

The instant claims are to a method of manufacturing a flow field plate comprising the steps of positioning a particulate etchant-resistant mask comprising a pattern design adjacent a plate; and particulate etching the plate using a particulate etchant and a particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate.

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate comprising the steps of positioning a particulate etchant-resistant mask comprising a pattern design adjacent a plate; and particulate etching the plate using a particulate etchant and a particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate (col. 3, lines 20-65 and claims 1-17.) The accelerator may be particles of various grain sizes, which encompass sand, bead and grit sizes, (col. 2, lines 10-25; col. 5, lines 5-25.) Masking materials may be a photoresist mask, a metal or a synthetic material (col. 3, lines 20-50.) Adhesives for the masking material are noted. Figures 8-9 show two-axis etching of the plate and a raster pattern. Thus, the claims are anticipated.

Claim 22 is a product by process claim. The reference teaches a flow-field plate ( a transport plate) and there for the claim is anticipated. MPEP 2113 states, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5, 13, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Haas et al. (US 5,833,516) as applied above, and further in view of Balko et al. (US 4,339,322,) or, alternatively, over Balko et al. (US 4,339,322,) in view of De Haas et al. (US 5,833,516.)

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate as previously described. The reference does not teach the plate comprises a carbon fiber composite material with a polymeric filler. Balko et al. (US 4,339,322,) however, teaches a graphite/polymer current collector/separator for a fuel cell, which is inherently a flow field plate as it has channels for transporting reactants of a fuel cell. The reference teaches forming flow field grooves by pressure molding the material. The plates are assembled to form fluid entry and exit areas, which are aligned with stacked plates (figure 1.) It would be obvious to one of ordinary skill in the art at the time the invention was made to use the methods taught in De Haas et al. (US 5,833,516) to form the flow field grooves of Balko et al. (US 4,339,322) as one of ordinary skill in the art would recognize that the methods of DeHaas will provide the same function and result when used to form channels on the graphite/fiber plate as taught by Balko. The motivation to combine the prior art references arises from the expectation that the prior art

Art Unit: 1745

method will perform its expected function to achieve an equivalent result in forming grooves in the separator element of Balko. The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

Claim 9 is rejected under 35 U.S.C. 102(b) as being obvious over De Haas et al. (US 5,833,516) in view of Van Kuiken (US 5,380,564.)

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate comprising the steps of positioning a particulate etchant-resistant mask comprising a pattern design adjacent a plate; and particulate etching the plate using a particulate etchant and a particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate (col. 3, lines 20-65 and claims 1-17.) The accelerator may be adjusted with regard to the type of abrasive, grain size, etc. (col. 2, lines 15-30.) The reference does not teach water-jet blasting of the material, however, it would be obvious to one of ordinary skill in the art at the time the invention was made to use water as the type of abrasive in order to etch the material. Water pressure is well known in the art to remove a material by pressure as taught by Van Kuiken (US 5,380,564.) One of ordinary skill in the art would recognize from the teaching of De Haas et al. that water may be used to etch a substrate as described in Van Kuiken (US 5,380,564.) Water may be used as an equivalent material in the process taught by De Haas et al.

Claim 12 is rejected under 35 U.S.C. 102(b) as being obvious over De Haas et al. (US 5,833,516) in view of Tolles (5,738,574.)

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate comprising the steps of positioning a particulate etchant-resistant mask comprising a pattern design adjacent a plate; and particulate etching the plate using a particulate etchant and a

Art Unit: 1745

particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate (col. 3, lines 20-65 and claims 1-17.) The accelerator may be adjusted with regard to the type of abrasive, grain size, etc. (col. 2, lines 15-30.) The reference does not teach silica grit blasting of the material, however, it would be obvious to one of ordinary skill in the art at the time the invention was made to use silica grit as the type of abrasive in order to etch the material. Silica grit is well known in the art to remove a material by pressure as taught by Tolles (5,738,574.) One of ordinary skill in the art would recognize from the teaching of De Haas et al. that silica grit may be used to etch a substrate as described in Tolles (5,738,574.) Silica grit may be used as an equivalent material in the process taught by De Haas et al.

Claim 16 is rejected under 35 U.S.C. 102(b) as being obvious over De Haas et al. (US 5,833,516) in view of Kondrats (5,750,190.)

De Haas et al. (US 5,833,516) teaches a method of manufacturing a transport plate comprising the steps of positioning a particulate etchant-resistant mask comprising a pattern design adjacent a plate; and particulate etching the plate using a particulate etchant and a particulate etchant accelerator so that a fluid flow pattern determined by the pattern design is formed on the plate (col. 3, lines 20-65 and claims 1-17.) The accelerator may be adjusted with regard to the type of abrasive, grain size, etc. (col. 2, lines 15-30.) The reference does not teach a vinyl polymer as the mask material, however, it would be obvious to one of ordinary skill in the art at the time the invention was made to use a vinyl polymer as the mask in order to protect the material. Vinyl polymers grit is well known in the art to protect or mask a material as taught by Kondrats (5,750,190.) One of ordinary skill in the art would recognize from the teaching of Kondrats (5,750,190) that a vinyl polymer may be used to protect a substrate from etching and

Art Unit: 1745

blasting as described. From these teachings one of ordinary skill in the art would recognize that a vinyl polymer may be used as a mask material in the process taught by De Haas et al.

*Examiner Correspondence*

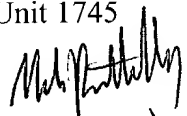
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky

Primary Patent Examiner

Art Unit 1745

  
2/22/04